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## GENERAL REVIEWS AND SUMMARIES

CUTANEOUS, KINÆSTHETIC AND MISCELLANEOUS  
SENSES

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*Cutaneous Sensation.*—So far as the literature of the year 1911 has been accessible to the reviewer, perhaps the most significant piece of work on cutaneous sensation is that by Kiesow (10). It concerns the observation of E. H. Weber (published in 1846) that a given object (German *Thaler*) felt, on the skin of the forehead, when cooled, heavier than when warmed. The problem rouses a somewhat livelier interest because of the observations of Szabadföldi (1865), apparently contradictory to those of Weber. Szabadföldi found that, of two discs of hard wood, one warmed to 50° or more and the other of indifferent temperature, the warmer disc felt the heavier, even though actually smaller than the other, but that the character of the results was somewhat dependent on the diameter, thickness and absolute weight of the discs utilized.

Kiesow, in his own tests, verifies Weber's results, even if the warmer object has a temperature as high as 50°, provided that the other gives a manifest sensation of cold. Szabadföldi is, however, confirmed when a disc of 50° is compared with one of indifferent or slightly warm temperature. Diameter, thickness, or absolute weight have, furthermore, no special influence on the result. Nor have such different substances as copper, silver and nickel coins, cork, gypsum, cardboard, paper, etc. It was found, finally, that a cold stimulus as such may give an impression of weight (evaporating ether from a saturated disc of filter-paper as compared with a similar disc,

not etherized and tactually unfelt). The best results, as in the case of the earlier experimenters, were obtained on the forehead. Other facts observed by Kiesow were that the cooler object appears to have the greater area and to lie deeper in the skin than the warmer.

As for explanation of the main phenomenon, Kiesow offers the following (p. 85): Es "kann als sicher gelten, dass die Erregung der Tastorgane eine Funktion des an ihrem Orte herrschenden Druckgefälles ist, und es kann weiter als wahrscheinlich angenommen werden, dass hierbei Konzentrationsänderungen der Zellflüssigkeit auftreten, die direkte Erregung der Tastorgane durch Änderungen des osmotischen Drucks verursacht wird, im letzten Grunde also eine chemische ist. Dies vorausgesetzt, . . . dürfte die Annahme berechtigt sein, dass auch der Kältereiz im Innern der Haut Veränderungen hervorruft, die den durch mechanische Einwirkungen erzeugten Deformationen analog sind. Durch diese würde unter den genannten Voraussetzungen dann ebenfalls eine Störung des chemischen Gleichgewichts herbeigeführt werden, die ihrerseits wiederum auf die Enden der Tastnerven einwirken muss. . . . Dass bei Einwirkung von Kältereizen Kontraktionen der einzelnen Gewebsteile auftreten müssen, ist eine Tatsache, die ausser allem Zweifel steht. . . . Dass solche Kontraktionsvorgänge weiter Verschiebungen der Gewebsflüssigkeit und demzufolge auch wohl Konzentrationsänderungen der Zellflüssigkeit nach sich ziehen müssen, dürfte somit nur eine berechtigte Folgerung sein." The warmer object, furthermore, feels lighter than it normally would feel because the heat, causing expansion of the tissue or of the cell fluids, exerts a stimulus on the touch organs in a direction contrary to that given by its weight, so that the latter cannot have the full effect that it would, acting alone, possess. If the object is further warmed, the expansion-effect outbalances the antagonistic pressure-effect and one observes Szabadföldi's phenomenon—the warm object appears heavier than one of indifferent temperature—since a pressure organ mediates the same kind of sensation whatever the direction in which the stimulus acts. The forehead, finally, is the most favorable field for tests, since the sensitivity to pressure is great, the pressure spots thicker together and the skin thin. Other parts of the body with these characteristics also give the phenomena, although less pronounced.

v. Frey (7) gives simply a preliminary report of experiments made with H. D. Cook on the influence of different pressure-stimuli on one another. So far as tactual *sensation* is concerned, it was found

that the stimulation of two points on the skin yields mutual facilitation (two simultaneous impressions, either alone subliminal, rising above the threshold) and that this is in dependence on their distance apart and their relative intensity. Of three equally intense stimulations, for instance, two near together are subjectively more intense than a third more distant. v. Frey's results apparently contradict those of Heymans, who found that tactual stimuli have, in proportion to their proximity, a mutually inhibitory effect. One awaits with interest, therefore, the full report of v. Frey's work.

Siebrand (18) concerns himself with differential sensitivity to cold stimuli. The areas tested were on the ball of the thumb and the volar forearm. The results were as follows: (1) Stimulation of a given cold spot at various stimulus temperatures, with a constant area of contact, showed marked individual differences,— $4^{\circ}$  C. for one subject,  $3^{\circ}$  C. for another; (2) increasing the area of stimulation, although on but a single cold-spot, increased discriminability; (3) increase in the number of cold-spots stimulated, with constant temperature and area, increased felt intensity of cold, the same results obtaining, too, if the area was enlarged but the number of spots stimulated constant; (4) a single cold-spot, if thickly set with others, gave a lower threshold than one more isolated.

Barnholt and Bentley's experiments (4) concern the problem of the effect of areal or numerical increase of thermal stimulus on sensory intensity. On chosen surfaces (palm, volar forearm) 70 per cent. of the observations of three subjects gave intenser cold with the larger area. Less sensitive areas were then compared with more sensitive, the smallest stimulus area being used for the latter and all other areas for the former. A large less sensitive area may thus report intensities equal to a small area of greater sensitivity. Tests of another sort showed, however, that the intensity of a temperature sensation is determined by the most sensitive area in the excited complex. The high intensity of a large area is doubtless due in part at least to the better conditions afforded by a stimulus of great area for conduction to the true temperature organs. These results may be profitably compared with those of Siebrand.

The clinical interest in tactual sensation is represented by the articles of Baglioni and Pilotti (2), Minor (13), and Maloney and Kennedy (12). The first of these, on the effects of stovaine injections, duplicates an article in German, by the same authors, and already reviewed in the *BULLETIN* last year (p. 152). Minor offers a convenient thermæsthesiometer for psychiatric-clinical use by means

of which the temperature difference between two stimulus tubes, filled with water, may be quickly reduced. Maloney and Kennedy tested the pressure sense about the face in a number of cases with well-defined lesions of the fifth, seventh and twelfth cranial nerves, in an attempt to determine the functional distribution of these nerves. It is impossible to enter into the details of their discussion. Of general interest to psychologists is their statement that after removal of the Gasserian ganglion (origin of the fifth nerve), the areas of the face anæsthetic to light touch are identical with those lacking deep sensibility. It will be remembered that Head and Sherren found, for lesions to the radial nerve, that the former extended beyond the latter. Maloney and Kennedy believe the *apparent* greater circumscription of the areas of loss of deep sensibility, in their tests on the face, to be due to the tension effect of the heavier stimulus on the normal tissue bordering the anæsthetic area. This can, in the reviewer's opinion, scarcely explain the findings of Head and Sherren, since the area of loss for light touch often went far beyond that for pressure. Certain of the authors' further conclusions are (1) that the fifth nerve is the essential path for pressure-touch impressions in the face; (2) that the seventh nerve in the Fallopian canal is associated with fibers mediating pressure-pain from the skin muscles and bones of the facial muscular apparatus up to pressure of about four kilos (low threshold mechanism); (3) that the peripheral twelfth subserves no sensory function for the tongue; and (4) that the sympathetic mediates a crude pressure-pain sensibility for pressure upwards of four kilos (high threshold mechanism), a mechanism less sensitive, therefore, than that of the fifth or seventh nerves.

The interest of the work of Willis and Urban (22) with weights lies in the sphere of psychophysical methods and need not here be considered. Their article is supplementary to a previous publication.<sup>1</sup> Ziehen (23) argues for the method of right and wrong cases in investigations of the kinæsthetic sense, especially in its development and in that of kinæsthetic space in children. Incidentally he states his belief that what one really investigates is not kinæsthetic sensations, but a fusion of mechanical stimulations in the joint, muscles and tendons felt as an indeed very indefinite *Berührungsempfindung*, with ideas of movement, the latter being normally visual but, for the blind, tactual. What is really investigated is, therefore, ideas of movement *evoked* by kinæsthetic sensations.

<sup>1</sup>Urban, F. M., "Die psychophysischen Massmethoden als Grundlagen empirischer Messungen," *Arch. f. d. ges. Psychol.*, 1909, 15, 264-267.



Kunz (11) returns to a polemic (Cf. *Zsch. f. päd. Psychol.*, 1909, Vol. 9) on the nature of distance "sensation" or "feeling" as distinct from orientation, maintaining his previous conclusions, that this sense, localized on the skin, is indeed of tactual and not auditory origin.

*Organic and Other Sensations.*—Physiologists and clinicians return again and again to the problem of the sensibility of the inner organs. Neumann (15), in a series of articles scattered through the volume, gives a comprehensive historical review of work up to 1910. In another series (16) he reports certain experiments on the frog. Uncovering and stimulating the various inner organs (pinching with forceps, faradic stimulation, hot glass rod, etc.) he secured from most of them a peculiar reaction—a stretching and backward bending of the back, slow and quite distinct from the jerky defense reactions. In other experiments, conclusions concerning the functional distributions of nerves were reached.

Hertz (9), in three lectures, partly historical and critical, partly based on his own experiments on direct stimulation of the alimentary canal of human beings and on inferences from the symptomatic pains of typical alimentary diseases, gives, among manifold other conclusions, the following: (1) "The mucous membrane of the alimentary canal from the upper end of the œsophagus to the junction of the rectum with the anal canal is insensitive to tactile stimulation." (2) "The mucous membrane of the œsophagus and the anal canal is sensitive to thermal stimulation, but that of the stomach and intestines is insensitive. (3) The only immediate cause of true visceral pain is tension; this is exerted on the muscular coat of hollow organs and on the fibrous capsule of solid organs. . . . Pain in diseases of the alimentary canal is most frequently true visceral pain; it is sometimes due to spread of the disease to surrounding sensitive structures or to tension exerted on the peritoneal connexions" (p. 1193). Mitchell (14) concludes from a series of correlations between accounts of pains of his patients before abdominal operations and his findings on operating that the parietal peritoneum, and consequently the organs involved with it, is sensitive to pain, but that the visceral peritoneum with its abdominal organs supplied only by the sympathetic system is not sensitive. This result supports in general the views of Lennander (1901). Dana (6) gives an entertaining discussion of the possible correlations between types of pains and types of psychoneuroses.

Two papers, one by Alexander (1), the other by Bárány (3), on

the functions of the inner ear deserve passing mention. Alexander's is a succinct and comprehensive review of the facts and theories concerning the functions of the vestibular apparatus. Bárány's is a brief summary of his theoretical position discussed in extenso in another article.<sup>1</sup>

Oppenheim (17) describes and discusses cases met with in his practice of permanent dizziness not assignable to objective causes. It differs from either cerebellar or vestibular dizziness and always begins with a marked attack, resists treatment, especially psychotherapeutic, and is probably not in the psychiatric sense a mental trouble, but is rather dependent on some still undiscovered irritation in the central nervous system. Friedländer (8) reports a case, however, manifestly hysteric in origin, but showing the same stubborn permanent dizziness already described by Oppenheim. Cruchet and Moulinier (5) gives merely a brief description of symptoms of aviator sickness.

Finally, Sternberg (19, 20), recurs anew in two articles to his already much exploited doctrines of the nature and functions of appetite. A third article (21) gives another of his remarkable discussions on *tickling feelings*. He attempts to define, chiefly on the basis of philological usage, the meaning and function of tickling in general and in particular. When philological analysis has done its best "erst dann," he thinks, "wird man zur Feststellung des Begriffes der Kitzelgefühle und zur Einsicht in das Wesen des Kitzels gelangen" (p. 109). Bis dahin—Geduld!

## REFERENCES

1. ALEXANDER, G. Die Funktionen des Vestibularapparates. *Ber. IV. Kongress f. exper. Psychol.*, 1911, 74-94.
2. BAGLIONI, S., & PILOTTI, G. Recherches dans la rachistovainisation humaine. *Arch. ital. de biol.*, 1911, 55, 82-90.
3. BÁRÁNY, K. Zur Theorie des Bogengangapparates. *Ber. IV. Kongress f. exper. Psychol.*, 1911, 250-252.
4. BARNHOLT, S. E., & BENTLEY, M. Thermal intensity and the area of stimulus. *Amer. J. of Psychol.*, 1911, 22, 325-332.
5. CRUCHET, R., & MOULINIER, —. Le mal des aviateurs. *C. r. acad. d. sci.*, 1911, 152, 1114-1115.
6. DANA, C. L. The interpretation of pain and the dysesthesias. *J. of the Amer. Med. Assoc.*, 1911, 56, 787-791.
7. FREY, M. VON. Die Einwirkung einfacher Druckempfindungen aufeinander. *Ber. IV. Kongress f. exper. Psychol.*, 1911, 233-236.
8. FRIEDLÄNDER, A. Bemerkungen zu Oppenheim's Arbeit: "Ueber Dauerschwindel." *Neur. Centbl.*, 1911, 30, 1162-1164.

<sup>1</sup> *Zsch. f. Sinnesphysiol.*, 1910, 45, 63-68.

9. HERTZ, A. F. The sensibility of the alimentary canal in health and disease. *Lancet*, 1911, 180, 1051-1056; 1119-1124; 1187-1193.
10. KIESOW, F. Ueber die Versuche von E. H. Weber und M. Szabadföldi, nach welchen einer Hautstelle aufliegende Gegenstände von gleicher Grösse nicht gleich schwer empfunden werden, wenn ihre Temperaturen gewisse Unterschiede aufweisen. Nach einer zum Teil von Dr. Leopold Chinaglia ausgeführten Untersuchung. *Arch. f. d. ges. Psychol.*, 1911, 22, 50-104.
11. KUNZ, M. Zum "Ferngefühl" als Hautsinn. *Zsch. f. päd. Psychol.*, 1911, 12, 621-634.
12. MALONEY, W. J., & KENNEDY, R. F. The sense of pressure in the face, eye and tongue. *Brain*, 1911, 34, 1-28.
13. MINOR, L. Ein neuer Thermoästhesiometer mit Mischvorrichtung. *Neur. Centbl.*, 1911, 30, 1037-1041.
14. MITCHELL, J. F. Sensibility of the peritoneum and abdominal viscera. *J. of the Amer. Med. Assoc.*, 1911, 57, 709-712.
15. NEUMANN, A. Ueber die Sensibilität der inneren Organe. *Centbl. f. d. Grenzgeb. d. Med. u. Chir.*, 1910, 13, 1ff.
16. NEUMANN, A. Zur Frage der Sensibilität der inneren Organe. *Centbl. f. Physiol.*, 1911, 24, 1213-1217; 1217-1219; 25, 53-56.
17. OPPENHEIM, H. Ueber Dauerschwindel (vertigo permanens). *Monat. f. Psychiat. u. Neur.*, 1911, 29, 275-293; *Neur. Centbl.*, 1911, 30, 290-296.
18. SIEBRAND, —. Untersuchungen über den Kältesinn. *Zsch. f. Sinnesphysiol.*, 1911, 45, 204-216.
19. STERNBERG, W. Das Appetitproblem in der Physiologie und in der Psychologie. *Zsch. f. Psychol.*, 1911, 59, 91-112.
20. STERNBERG, W. Der Appetit in der exakten Medizin. *Zsch. f. Sinnesphysiol.*, 1911, 45, 433-459.
21. STERNBERG, W. Die Physiologie der Kitzelgefühle. *Zsch. f. Psychol.*, 1911, 60, 73-109.
22. WILLIS, C. A., & URBAN, F. M. Ein Beitrag zur Kenntnis der psychometrischen Funktionen im Gebiete der Gewichtsempfindungen. *Arch. f. d. ges. Psychol.*, 1911, 22, 40-46.
23. ZIEHEN, T. Die Methoden zur Prüfung der Kinaesthetischen Empfindungen. *Zsch. f. Päd. Psychol.*, 1911, 12, 216-225.

## SYNÆSTHESIA

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A full and detailed account of the case of colored gustation reported in outline last year<sup>1</sup> is now available (x). It is abundantly shown that the subject—a young man of college age—has a defective sense of taste. Tastes seem to be recognized largely by tactual accompaniments and discriminated by their "feel" and by the color induced. Substances as different as cayenne pepper and quinine

<sup>1</sup> Cf. *PSYCHOLOGICAL BULLETIN*, 1911, 8, 158.

(both in solutions) are indistinguishable, both producing the same "feel" on the tongue and both inducing the same color—a dull orange-red. Furthermore, the behavior of the induced color is at times dependent upon the temperature of the solution. Plugging the nostrils reduced the intensity and persistence of the taste-colors. A reasonably definite correlation between taste-color tones and taste qualities was made out.

The genuineness of the synæsthesia and the sensational (rather than imaginal) value of the taste-colors is attested by (1) the constancy of the correlation just referred to, (2) the persistence of the induced color (sometimes for more than ten minutes), (3) its localization (in the mouth), (4) its independence of the subject's volition, and (5) the feelings of tension and dizziness when simultaneously experiencing a taste-color and fixating a colored surface.

The case of colored audition reported by Myers (3) is peculiar first in the fact that colors are induced only by tones,—timbre, intensity, and the pitch of the foregoing tone being conjointly influential. Tones below 600 vibrations per second give brown and orange colors; those between 600 and 12,000 give blue, changing to green; and those above 12,000 give a colorless gray. The subject is a man of thirty, unmusical.

This case stands in marked contrast with that summarized above, the induced color being neither sensory nor imaginal in character. The subject "insisted that his imagery was verbal or more often that his thoughts were entirely imageless." As a believer in "imageless thought" Myers finds no difficulties here.

The subject himself "regards his synæsthesia as the result of some 'sympathy' existing in him between auditory and visual experiences." Myers interprets this as analogous to the tendencies by which we speak of tones as "heavy, rounded or dull"; and in the fact that synæsthesias are more common among children he sees grounds for the view that "their origin may perhaps be ascribed to the persistence of a primitive stage in the differentiation and elaboration of sensations and in the development of their functional interrelation." Strong tendencies to association, combined with the "sympathy" referred to, would then be favorable to the formation of synæsthesias.

The paper by Medeiros-e-Albuquerque (2) is weak and unconvincing, with a quite unjustified title. The author finds that those who think only in Portuguese associate the *u* of that language with the color black. This arises from the fact that *u* is the accented vowel of



the majority of Portuguese words signifying black objects or ideas relating to black. This association is, admittedly, no true synæsthesia, but the author believes that it is only a matter of degree between these logical and spontaneous associations and genuine cases of colored audition.

## REFERENCES

- DOWNNEY, JUNE E. A Case of Colored Gustation. *Amer. J. of Psychol.*, 1911, 22, 528-539.
- MEDeiros-E-ALBUQUERQUE. Sur un phénomène de synopsie présenté par des millions de sujets. *J. de psychol. norm. et path.*, 1911, 8, 147-151.
- MYERS, C. S. A Case of Synæsthesia. *Brit. J. of Psychol.*, 1911, 4, 228-238.

## AFFECTIVE PHENOMENA — EXPERIMENTAL

BY PROFESSOR JOHN F. SHEPARD

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Three articles have appeared from the Leipzig laboratory during the year. Drozyński (2) objects to the use of gustatory and olfactory stimuli in the study of organic reactions with feelings, because of the disturbance of breathing that may be involved. He uses rhythmical auditory stimuli, and finds that when given at different rates and in various groupings, they are accompanied by characteristic feelings in each subject. He records the chest breathing, and curves from a sphygmograph and a water plethysmograph. Each experiment began with a normal record, then the stimulus was given, and this was followed by a contrast stimulus; lastly, another normal was taken. The length and depth of breathing were measured (no time line was recorded), and the relation of length of inspiration to length of expiration was determined. The length and height of the pulse-beats were also measured. Tabular summaries are given of the number of times the author finds each quantity to have been increased or decreased during a reaction period with each type of feeling. The feeling state accompanying a given rhythm is always complex, but the result is referred to that dimension which seemed to be dominant. Only a few disconnected extracts from normal and reaction periods are reproduced from the records.

The author states that excitement gives increase in the rate and depth of breathing, in the inspiration-expiration ratio, and in the rate and size of pulse. There are undulations in the arm volume. In so far as the effect is quieting, it causes decrease in rate and depth of

breathing, in the inspiration-expiration ratio, and in the pulse rate and size. The arm volume shows a tendency to rise with respiratory waves. Agreeableness shows an increase in rate of breathing, the inspiration-expiration ratio, and size of pulse; and a decrease in depth of breathing and pulse rate. There is a tendency for the volume to rise with respiratory and other waves. Disagreeableness is accompanied by increase in rate of breathing and pulse, decrease in depth of breathing and height of pulse. In the arm volume there are falls and undulations. Strain causes generally faster and shallower breathing, faster and stronger pulse, and a rise of arm volume with respiratory waves. Relaxation shows slower and deeper breathing, slower and stronger pulse. When excitement is combined with the others, it seems to dominate in the organic expression. Each feeling has its characteristic expression-valence. There are many exceptions to all correlations. A given feeling may show itself in only part of the expressive reactions at once. The author considers the breathing the most reliable index of feeling.

One criticism especially must be passed upon this and many other works of the kind. It is necessary that sufficient data be reproduced in some complete and accurate form that the reader may judge for himself whether physiological matters have been adequately considered, whether the reactions are significant and whether he agrees with the author's interpretation. Otherwise one need not place much confidence in the conclusions. This article does not fulfill such requirements.

The second article from Leipzig is by Rehwoldt (5). He recorded curves from five pneumographs, two on the chest and three on the abdomen, and from a sphygmograph. After the apparatus was adjusted, the subject gave a signal when he had succeeded in placing himself in an indifferent condition and a normal record was taken. The subject then aroused an affective state by reproduction of an experience or idea. He gave a signal when he had succeeded in this and a reaction record was taken. From two to six affective states were thus studied in an hour and finally another normal curve, modified perhaps by resonance of the preceding feelings, was taken. The subject's report was recorded after each normal or reaction curve.

For each normal record the average length of breath and length of pulse and the amplitude of movement in each respiratory curve were determined in millimeters and tabulated. The inspiration-expiration ratio is also given. For each reaction record the inspiration-expiration ratio and the ratio of the other quantities to the similar measurements in the corresponding normal record are given.

The feelings obtained were always complex. The author found a clear-cut expression for quiet, excitement, and strain only. With quieting conditions, the inspiration-expiration ratio was less than one and the breathing tended to be abdominal. Excitement gave an inspiration-expiration ratio which was greater than one in the chest and tended to be greater in the chest than in the abdomen. There was a dominance of chest breathing and the rate of breathing was sometimes increased, sometimes decreased. Strain showed an inspiration-expiration ratio which averaged about one and the rate of breathing was increased. There was no certain correlation between agreeableness and decreased heart rate.

Stefănescu-Goangă (6) studied the affective states caused by colors, and the organic expression of these affective states. Light from a projection lantern was passed through colored gelatine and thrown upon a white screen in a darkened room. In the greater part of the experiments a single, isolated stimulus was used. The subject was asked to describe the affective state, and was helped by questions from the experimenter. In part, the method of paired comparison, both successive and simultaneous, was used. The chest and abdominal breathing, and a sphygmographic curve were recorded. A normal period, a stimulus period, and a recovery period constituted a test.

The length of breaths, the depth of chest and abdominal breathing, the inspiration-expiration ratio, the depth at the middle of inspiration and that at the middle of expiration compared with the total depth, and the pulse length were determined by measuring the curves in millimeters. Tabular summaries give the number of cases and direction of change which the author finds in each of these quantities when the reaction period is compared with the normal period.

The colors are found to cause strong affective states which must be classified first of all under the heads of excitement and rest or depression. Excitement is the most constant and dominant feeling with red, orange, yellow and purple; rest or depression is foremost with green, blue, indigo and violet. Combinations with agreeableness or disagreeableness are variable. Excitement and rest are not simple feeling qualities, but rather feeling dimensions, each one of manifold varieties.

The author decides that the organic expressions indicated by the results are as follows: Excitement causes faster breathing and increased depth of breathing especially in the chest. The inspiration-expiration ratio, the pulse rate and size of pulse are increased. The

form of the curve shows a forceful beginning of inspiration. Rest or depression gives opposite reactions. Agreeableness shows a tendency toward decreased chest and increased abdominal breathing. The length and size of pulse are increased. With disagreeableness the opposite pulse reactions are found. In the breathing changes, agreeableness approaches rest, disagreeableness approaches excitement.

As nearly as one can judge from measurement of the curves published, it seems to me that the majority show no definite reaction in pulse rate, and No. 4 gives a result opposite to that assigned to it. It is noticeable that these articles from Leipzig all insist that we must find a basis in organic expression for the tridimensional theory of feeling; but they differ as to the details of such reactions, and differ markedly from the statements of others who have tried to defend the same theory in the past.

Leschke (3) gives a very interesting and useful critical discussion of work that has been done on organic accompaniments of mental processes. I may take this occasion to say that an attempt to use related methods caused me to be much more skeptical than Leschke seems to be, of the results from the "inner plethysmograph" and balance-board of Weber.

Wells and Forbes (9) give evidence which tends to show that electromotive changes and especially resistance changes in the psychogalvanic test are due to sweat-gland activity. Atropine, which tends to paralyze the sweat glands, obliterates the response with stimuli. When the fingers used in a cell current were coated with paraffin, both the original deflection and the emotional reaction were small. When the paraffin was scraped from the finger-nails only, the original deflection was much increased, but emotional reactions remained very small. When the remainder of the finger was bared, the original deflection was somewhat further increased, the emotional reaction was relatively greatly increased. They find that the use of a cell current will give more uniform and reliable results in the study of emotional reactions than the use of the body current. The latter would merely give the difference between the action of the sweat-glands at the two electrodes, while the former would depend upon the lowered resistance from the combined action at the two electrodes.

In a series of experiments stimulus words were given and the association times were recorded along with the amount of deflection. The subjects classified the degree of emotion called out as: "(A) strongly emotional, (B) rather emotional, (C) rather unemotional,



(F) practically devoid of emotion." On the whole the results show a relationship between the degree of emotion and the amount of electrical change. But this does not hold in individual cases, especially with grades below *A*. There is no such correlation between the association time and either the introspection or the electrical change.

A few experiments with abnormal patients suggest that the failure of ordinary motor response in catatonic stupor "resulted rather from inhibition of reaction than from failure to apprehend." This was DeBruyn's conclusion from vasomotor tests.

Cannon and de la Paz (1) tested the blood from the adrenal veins of a cat before and after the animal had been frightened. They found that the emotion caused an increased adrenal secretion. The persistence of the emotional state may be due to this greater supply of adrenal secretion in the blood.

Miss Washburn and co-workers (7) compared colored paper squares 5 cm. a side with others 25 cm. a side. They found that saturated colors are preferred in the smaller area, except saturated red; the larger area of tints and shades is preferred.

When colors are fixated for one minute the arousal of associations and adaptations may change the affective value (8). Associations have little influence on saturated colors. What they have is favorable. Adaptation is favorable to violet, blue and green, unfavorable to yellow and red. Associations were favorable to the tints and to the shades of violet, green, orange and red. Adaptation was, on the whole, unfavorable to tints and shades.

Prandtl (4) investigated the question whether the feeling content of consciousness has an influence on the time of reading and the accent. He found that serious passages were read more slowly than light ones and stimulating articles were read more slowly than restful ones. With passages which might be either serious or light, according to the point of view, it was found that the subject read them more slowly when made to think of them as serious. In reading serious or stimulating texts or those considered so, more accents were used and more and longer pauses were made, than in reading other texts. Even if the extra time occupied by accents and pauses were subtracted from the total, the reading time for the serious and stimulating passages would still be relatively long.

#### REFERENCES

1. CANNON, W. B., & DE LA PAZ, D. Emotional Stimulation of Adrenal Secretion. *Amer. J. of Physiol.*, 1911, 28, 64-70.
2. DROZYŃSKI, L. Atmungs- und Pulssymptome rhythmischer Gefühle. *Psychol. Stud.*, 1911, 7, 83-140.

3. LESCHKE, E. Die körperlichen Begleiterscheinungen seelischer Vorgänge. *Arch. f. d. ges. Psychol.*, 1911, 21, 433-463.
4. PRANDTL, A. Experimente über den Einfluss von gefühlsbetonten Bewusstseinslagen auf Lesezeit und Betonung. *Zsch. f. Psychol.*, 1911, 60, 26-45.
5. REHWOLDT, F. Über respiratorische Affektsymptome. *Psychol. Stud.*, 1911, 7, 141-195.
6. ȘTEFĂNESCU-GOANGĂ, F. Experimentelle Untersuchungen zur Gefühlsbetonung der Farben. *Psychol. Stud.*, 1911, 7, 284-335.
7. WASHBURN, M. F., CLARK, D., and GOODELL, M. S. The Effect of Area on the Pleasantness of Colors. *Amer. J. of Psychol.*, 1911, 22, 578-579.
8. WASHBURN, M. F. and CRAWFORD, D. Fluctuations in the Affective Value of Colors During Fixation for One Minute. *Amer. J. of Psychol.*, 1911, 22, 579-582.
9. WELLS, F. L. and FORBES, A. *On Certain Electrical Processes in the Human Body and their Relation to Emotional Reactions.* (No. 16 of Archives of Psychology). New York: The Science Press, 1911. Pp. 39.

## AFFECTIVE PHENOMENA — DESCRIPTIVE AND THEORETICAL

BY PROFESSOR H. N. GARDINER

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Fundamental questions are discussed systematically by Rehmke (18) in a second edition of a well-digested treatise, a characteristic feature of which is its attempt to relate feeling, emotion and mood. Feeling (*Gefühl*) is defined as a *Bestimmtheitsbesonderheit des zuständlichen Bewusstseins*. Consciousness being conceived as the individual soul, its state is assumed to be at any given moment simple and unique; hence the momentary feeling is always one of pleasure or displeasure, never "mixed." It is determined, not by any one, but by the totality of the objective factors, those being *massgebend* which are in the focus of attention. A "feeling," in the ordinary sense, is a complex of the affective state and the "determining" and "accompanying" objective components, the "determining" objects of attention giving the kind of feeling, the "accompanying" organic sensations being mainly responsible for its obscure "coloring" and its degree. Mood (*Stimmung*) appears in a certain contrast to "feeling" in that in it organic sensation is the "determining" factor and no particular object occupies the focus of attention. Emotion (*Affekt*) is not contrasted with "feeling," but is "feeling" characterized by the intensity of the "accompanying" organic sensations, which are rightly included in the emotion; we must not, however, confuse, with James and Lange, the bodily changes which give rise

to these sensations and those bodily movements which follow on the emotion and express it.

A novel point of view for the conception of feeling, as of many other mental phenomena, is proposed by Watt (22). Feeling for him is neither a sensation, nor an attribute, nor a unique element, but an experience of a mode of the integration of elements. Pleasure, *e. g.*, may be the result of the mutual harmony of integrations. The theory most nearly resembles activity theories of feeling. Watt has no difficulty in meeting the most obvious objections to the general principle, but admits that the specific integrative basis of feeling is still to seek. Titchener's criterion of feeling, lack of clearness, explained (21) as meaning, not that feeling is dim, but that it is non-clear in the same way that it is non-spatial, is criticised by Watt (23), who finds a state that lacks clearness as unintelligible as a state that lacks duration. The real question appears to be whether feeling, as such, is a possible object of attention. The difficulty comes up in another form in the dispute as to the content of feeling. The common opinion that the *esse* of feeling is *sentire* and therefore indubitable is called in question by Joachim (17), who contends that there is a distinction between "feeling" and "felt" analogous to that between "perceiving" and "perceived" and that accordingly, since everywhere "experiencing" and "what is experienced" are mutually determining correlatives, pleasures and pains are not self-identical qualities attached only in varying degrees to intellectual contents, but differ internally and may be more or less illusory. Tassy (20) refers feelings in general to a twofold origin, one *constituante*, or primary, the other *de spécialisation*, the source of their intellectual meaning. He conceives the "intelligence" as constituted by the association of several relatively autonomic functions, designated respectively as "psychic" (directly implicating personal interest), "mental" (pure ideation) and "organic." Some feelings originate in the mechanism of the mental activity and are then individualized in the psychic; others depend on organic activity and derive their specific character from the mental or psychic mechanism. In connection with a speculative construction of their neurological basis, the author traces, rather obscurely, the origin and complications of certain feelings under the above three heads.

Claparède (10) finds in the discussion of affective memory a double source of confusion, disagreement as to the criterion of memory and misunderstanding of the James theory of emotion. The only indubitable form of affective memory is that constituted by recog-

dition, but that does not necessarily include an "image" of the object, nor is there any proof of the representation, or reproduction, of an affective state except through the intervention of organic processes. But these on the James theory are the causes of actual emotion. To prove affective memory in Ribot's sense we should have to show, what in the author's opinion has not been done, either (a) that the James theory is false, or (b) that in affective memory the organic processes follow the conscious affective phenomena, or (c) that these processes are entirely wanting. The improbability of affective memory is further argued from the utility of the ideal representation of objects not present, whereas there is no such evident need of the ideal revival of what we can actually experience as our own state. Apart from this theoretical discussion, which, of course, does not deny that we remember in some sense our affectively colored experiences, the question has been raised whether we do not tend to forget the disagreeable. Henderson (15) adduces facts and considerations which point to the negative. The different question, whether we tend to banish disagreeable memories, receives a qualified answer: we always strive to banish disagreeableness, and disagreeable thoughts which do not lead to efficient action probably tend to disappear; on the other hand disagreeable memories are important factors in learning by trial and error and in leading to the reconstruction of experience.

Several writers treat specifically of the theory of emotion and other complex affective phenomena. Binet (3, 4), taking as his point of departure the recent demonstration, as he considers it, of imageless thought, puts forth the hypothesis that the whole of psychology is summarized in two "elements," sensations and motor attitudes. Emotion and thought are both attitudes, the attitude in the former being accompanied by strong organic sensations, in the latter by a minimum of subjective sensations and a maximum of objective sensations or images. This distinction, however, is supplemented and qualified by consideration of the coördination of acts expressed by the attitude. The more organized the attitude, the more pronounced, other things being equal, will be its intellectual character; the less organized, the more the phenomenon is one of pure emotion. This hypothesis is regarded by its author as including, while making more definite, the explanations of the same facts by unconscious action, central adjustment, etc., and as constituting a veritable revolution by introducing into psychology the conception of dynamism as opposed to sensationalism. Brown (6) defines "passion" as



an uncontrollable emotion or system of emotional tendencies and criticizes Shand's suggestion of "sentiment" for the latter on account of the literary associations with that term of weakness and placidity. The identification of "tender emotion" with the parental instinct is criticized on the ground that it is also found in the pathos of many æsthetic emotions. Shand's working out of a "sentiment" like love as an organized system of emotions and desires is made the basis of Caldecott's thesis (7), illustrated by the case of St. Catherine of Genoa, that a central emotion can so organize the feelings as to make them constituents of a healthy ideal of life. Two papers on emotional expression read at the last meeting of the American Psychological Association deserve mention. Cannon (8) reported experiments which showed increased secretion of adrenalin, followed by glycosuria, in fear and rage in cats, suggesting that in the wild state these emotions might be useful in providing sugar as a source of energy for flight or attack. Huey (16), emphasizing the incoördination characteristic of emotion, laid special stress on the intellectual and linguistic disturbances. The real cause of emotion, he held, is a failure in the mechanics of brain integration occasioned by factors too difficult of synthesis under the given conditions. The organic theory of emotion is accepted in a qualified way by Chabrier (9), who criticizes James and Lange for not sufficiently allowing for the representative factor. Ideal processes, he maintains, determine the bodily and are essential to explain the complexity, extent and delicacy of the emotion. But they are only affective in so far as they act more or less directly on the organic function.

To the descriptive psychology of æsthetic experience Geiger (14) contributes a finely discriminating study of *Stimmungseinfühlung*. Experimenting first with simple colors, he found that, *e. g.*, the cheerfulness of the color was uniformly experienced as, in some sense, a quality of the color, not as a feeling of the subject. The relation of the subjective mood to this objective character was shown by further experiment to vary considerably; hence differences in the total feeling in consciousness. Both have the same tone of feeling, but that of the mood seems more external to the object, to overlay and suffuse it. The apprehension of the object was found by analysis of the author's own experience to involve four distinct kinds of apprehensive attitude, marked off by abstraction as the objective-passive, the *stellungnehmende*, where the relation between the object and the subject is reciprocal, the sentimental, in which the distinction between my experience and the feeling-character of the object is obliterated in

a still higher degree, and the *empfindende*, in which there is a more or less complete absorption of the object's character in my mood or of my mood in the object. Abramowski (1), whose work, in Polish, is known, however, to the writer only from a French review, suggestively applies to the interpretation of certain æsthetic and other experiences the conception of generic feelings or sentiments derived from past experiences and surviving the loss of their original presentative elements. The existence of such feelings is held to be experimentally demonstrated. According to Abramowski such feelings greatly influence the appreciation of beauty and artistic creation arises from the impulse to give to them a relatively adequate representative embodiment. Mystical experience shows analogous phenomena. Among the forgotten experiences which furnish such generic feelings the author mentions those of infancy, dreams, unnoticed impressions, hereditary memories and telepathy. We have here, perhaps, a clue to the psychological origin of Plato's doctrine of the reminiscence of Ideas.

The symptoms of many conditions of mental distress are described by Baker (2) in an article whose main purport is a plea for their more adequate recognition as mental rather than as bodily. He tells the pathetic story of a lady afflicted with Parkinson's disease who, with infinite patience, succeeded in the course of two years in spelling out, by means of children's blocks, a brief account of her mental state. Francia (11) reports the sorrows of a nervous little girl and describes the process of their alleviation. One important conclusion is that the series, sorrow—immediate reaction—substituted mental state, must be supplemented by an obscure sense of vitality at the decisive moment. Special interest attaches to the discussion before the American Pathological Association (19) as indicating the trend of opinion, at least in America, regarding the pathogenesis of emotional states of recurrent fears, phobias and anxiety. Much of the discussion dealt with the two Freudian doctrines, (a) of a distinct anxiety-neurosis, as over against phobias, and (b) the sexual origin of the former. False abstraction was charged against the first of these doctrines, hobby-riding against the second, both being defended by Jones and Putnam. Sidis regarded anxiety as simply the working of the instinct of fear, the obsession of which, conscious or unconscious, he held to be the tap-root of every functional psychosis. Prince traced the mechanism of recurrent psychopathic states mainly to the automatism of the "neurograms" established by residua of past experience combined with the fear instinct operating by auto-

suggestion. The original attack always arises, he thinks, in some psychical trauma. There is, however, an incomplete type of attack, identical with Freud's anxiety-neurosis, where the fear (anxiety) is expressed in the appropriate physiological symptoms without specific ideas to which it attaches itself. Prince thinks that in such cases the ideas are unconscious or co-conscious. The explanation varies with the cases. There is no fear, he thinks, apart from some experience suggesting danger. But in some cases the fixed ideas are mere cat's-paws made use of by the neurographic residua of other past experiences functioning in an unconscious process. The psychasthenia to which these states are commonly referred may itself, he thinks, be a consequence of other unconscious factors. Southard contributed a possibly important suggestion by distinguishing three types of etiology for these cases, vestigial (hereditary), residual (ontogenetic) and neoplastic (formed independently in the course of the disease).

Two authors treat at length of specific passions. De Fursac (13) brings together into a book the articles noticed here<sup>1</sup> a year ago on avarice, with an added chapter on pseudo-misers and a conclusion. He believes the vice incurable in the individual, but thinks that social changes are likely to greatly diminish in the future the number of its victims. Friedmann (12) gives what is probably the most exhaustive study of jealousy in scientific literature. Largely owing to the influence of Shakespeare, whose Moor of Venice is taken as the type of jealous passion, the term "jealous" has tended among ourselves to be conceived too narrowly and to lose connection with the etymologically identical term "zealous." Friedmann shows impressively the wide range of the passion, not only in love, but in every kind of competition in the family, in office and calling, in art, in science, in public life, between nations as well as between individuals. Its essential elements are the feeling of disturbed excitement in contemplating a rival and the impulse to drive him from the field. These are complicated and strengthened by feelings of fear, envy and wounded *amour propre*. The probable basis of the feeling is found in the impulse, prominent in sport, to actively participate in what we see another doing when we ourselves are prepared by habit and strong feelings of pleasure to do the same. The passion, which the author regards as one of the greatest of evils, is richly illustrated by facts from the animal world, by a survey of its manifestations among different peoples and different stages of civilization and, as might

<sup>1</sup> PSYCHOLOGICAL BULLETIN, 1911, 8, 166.

be expected from a specialist in nervous diseases, by pathological facts, some of which are of a rather startling character

Finally, reference may be made to Bridou's work (5) on the education of the sentiments, which is based on the conception of a law of functional subordination and directed especially against the imperfections and narrowness of French education.

## REFERENCES

1. ABRAMOWSKI, E. Les sentiments génériques en tant qu'éléments de l'esthétique et du mysticisme. *Przegląd filozoficzny*, 1911, 14, 156-185. Reported, *J. de psychol. norm. et path.*, 1911, 8, 368-371.
2. BAKER, S. The Relative Importance of Mental Pain. *Pop. Sci. Mo.*, 1911, 79, 355-368.
3. BINET, A. La nature des émotions. *J. de psychol. norm. et path.*, 1911, 8, 258 f.
4. BINET, A. Qu'est-ce qu'une émotion? Qu'est-ce qu'un acte intellectuel? *Année psychol.*, 1911, 17, 1-47.
5. BRIDOU, V. *L'Éducation des sentiments*. Paris: Doin, 1911. Pp. 403.
6. BROWN, W. Emotion and Morals. Reported, *Nature*, 1911, 86, 125 f.
7. CALDECOTT, A. Emotionality: a Method of its Unification. *Proc. Arist. Soc.*, 1911, 11, 206-220.
8. CANNON, W. B. Some Recently Discovered Physiological Changes Attending Fear and Rage. Reported, *PSYCHOLOGICAL BULLETIN*, 1912, 9, 73.
9. CHABRIER (DR.) *Les émotions et les états organiques*. Paris: Alcan, 1911. Pp. 159.
10. CLAPARÈDE, E. La question de la "mémoire" affective. *Arch. de psychol.*, 1911, 10, 361-377.
11. FRANCIA, G. Sul meccanismo dell' auto-consolazione. *Riv. di psicol. appl.*, 1911, 7, 105-144.
12. FRIEDMANN, M. *Ueber die Psychologie der Eifersucht*. Wiesbaden: Bergmann, 1911. Pp. vii + 112.
13. FURSAC, J. R. DE. *L'Avarice: Essai de psychologie morbide*. Paris: Alcan, 1911. Pp. 185.
14. GEIGER, M. Zum Problem der Stimmungseinfühlung. *Zschr. f. Aesth. u. allg. Kunstw.*, 1911, 6, 1-42.
15. HENDERSON, E. N. Do We Forget the Disagreeable? *J. of Phil., Psychol., etc.*, 1911, 8, 432-437.
16. HUEY, E. B. Emotivity and Emotion in their Relations and Adaptation. Reported, *PSYCHOLOGICAL BULLETIN*, 1912, 9, 63.
17. JOACHIM, H. H. The Platonic Distinction between "True" and "False" Pleasures and Pains. *Phil. Rev.*, 1911, 20, 471-497.
18. REHMKE, J. *Zur Lehre vom Gemüt*. 2te umgearb. Aufl. Leipzig: Dürr, 1911. Pp. viii + 115.
19. Symposium and Discussion on the Pathogenesis of Morbid Anxiety at the Meeting of the American Pathological Association in Baltimore, May 10, 1911, together with the President's Address on this and related topics. *J. of Abnorm. Psychol.*, 1911, 6, 81-181.
  - (1) JONES, E. The Pathology of Morbid Anxiety.
  - (2) SIDIS, B. Fear Anxiety and Psychopathic Maladies.



- (3) DONLEY, J. E. Freud's Anxiety Neurosis.
- (4) PRINCE, M. The Mechanism of Recurrent Mental States, with Special Reference to Anxiety States.
- (5) Discussion by J. J. PUTNAM, T. A. WILLIAMS, J. H. CORIAT and others.
- 20. TASSY, E. Essai de classification des états affectives. *Rev. phil.*, 1911, 71, 690-704; 72, 72-89.
- 21. TITCHENER, E. B. Feeling and Thought: a Reply. *Mind*, 1911, 20, 258-260.
- 22. WATT, H. J. The Elements of Experience and their Integration: or Modalism. *Brit. J. of Psychol.*, 1911, 4, 127-204.
- 23. WATT, H. J. Feeling and Thought: a Restatement. *Mind*, 1911, 20, 402-404.

## ATTENTION AND INTEREST

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Grassi (6) measured the effect of concentrated and dispersed or well-directed and misdirected attention upon reaction times. The experiments consisted in comparing the touch reactions to contact upon parts of the body where the stimuli were expected with those to stimuli upon unexpected places. Three degrees of preparation were distinguished. In the first the stimuli were all on the same part of the body, to which attention was directed in advance. In the second the stimuli were given alternately on each of two parts of the body for which preparation was had in advance. In the third touches upon unexpected parts of the body were interspersed irregularly in a series of the first sort. It was found that times increased from one to three for each sort of attention. Even longer times were found when the subject was surprised by the contacts. The writer explains the increased times for the less prepared spots as an expression of the time required to adjust the mental gaze to the new spot.

Jacobson (7) extends the experiments of Heymans on inhibition of liminal stimuli to supraliminal values. He compared weights and sounds with each other when other weights or sounds were also acting simultaneously and found that simultaneous stimuli always exerted an inhibitory effect. The weight or sound seemed less intense if another stimulus were given with it than if it were present alone. Similar diminution of intensity was observed if attention were relaxed on one stimulus. It was also found that the inhibiting effect of one stimulus upon another might be overcome by increased attention. He makes no attempt to connect the decrease in intensity with the decrease in clearness reported by other authors.

McComas (9) tests the methods of determining types of attention.

The work grew out of the statement of Stern and Meumann that it was possible to divide individuals into well marked classes on the basis of widely or narrowly distributed attention. He correlated the span of attention for words and colors, the span for auditory impressions, the ability to concentrate against distraction (inhibition) both in auditory and in visual attention, and the correlation of all with the type of imagery. Some of the more important conclusions are that there is a broad and a narrow spanned type of attention, and a close correlation between the span for auditory and visual attention. There is also an active, alert attention and a sluggish attention; the former is broad spanned. The ability to concentrate and inhibit and the dexterity of attention seem to have no close correlation with other qualities. Of the ideational types the visual has a broad span for both visual and auditory impressions, while the auditory has marked ability to inhibit sound and a large span for visual and auditory impressions given simultaneously. The motor type shows no marked correlations. There are a large number of incidental points that we have no space to mention, but which are of importance for other problems in attention.

Prager (10) studies the relations between defects of attention and control of associations. He raises two questions: (1) Does a disturbance of the function of association accompany disturbances of attention (*Merkfähigkeit*)? (2) Is it possible to discover in association tests any phenomenon that is directly connected with disturbances of attention? The questions are answered in the light of association tests on four patients who suffered from impairment of attention. The first is answered in the affirmative. All the patients showed lengthened reaction times and a tendency to the sentence form of association. The associations took the form of explanation, descriptions and egocentric responses toward the stimulus word. To the second question an affirmative answer is also given. Successive responses to the same word by the Pappenheim method showed no great shortening of the reaction time and little tendency to repeat the response. Both course of association and immediate retention are impaired with degeneration of capacity for attending. Another study of attention in pathology is by Franchini (5). His experiments consisted of a measure of the simple reaction times of patients. In general it is found that reaction times are slow and irregular and that there is a marked tendency to fatigue for all pathological mental states. Imbecility, dementia precox, the alcoholic and involution psychoses are marked mainly by the two former symptoms, the circu-

lar insanity by the quick onset of fatigue. In one article D'Allonnes (2) gives the results of a conceptual analysis of the attention processes as they are found in the insane. He insists that we must distinguish four varieties of attention, the momentary and the prolonged, the spontaneous and the provoked, and that these are present in different degrees and in different combinations in different cases. In order of disappearance they run from the light cases to the severe, the prolonged and provoked, the prolonged and spontaneous, the momentary and spontaneous, and the momentary and provoked, if we couple the forms as they are likely to be found in actual cases. He gives a long list of the symptoms under each of eight stages in the degeneration of attention. Much of it must however be largely hypothetical and no two men would agree on the details. In another paper (1) he reports a new and simple method of measuring disturbances of attention of momentary duration. The apparatus or device is a square with five divisions on each side, numbered vertically up to five and with five horizontal columns headed by the vowels. The problem is to point to the intersection of a line headed by a vowel and a line designated by a number. Thus a patient is asked to point to o3 and the time required to find it is measured. It was found that the time was increased for cases of dementia and mania over that required by normal individuals and that the more severe the case the longer the time.

A. Busch (3) has conducted a long series of experiments upon the effect of alcohol upon attention. Three measures were used; two upon attention proper and one of simple visual acuity. First the distribution of attention was measured by a device similar to Wirth's. This indicated that the more important effect was to narrow the field of attention. The figures in the periphery of the field of vision were very much more likely to be overlooked after a dose of 30 c.c. of alcohol than when normal. The central region is also affected in some degree, but not so noticeably. The second experiment consisted in measuring the apperception of letters by the Finzi method. This showed the same effect in more marked degree. A third series tested visual acuity under alcohol and found that it was either practically unaffected or increased. The effects noted are to be referred to the effects of alcohol upon the central processes, in spite of the increased efficiency of the peripheral nervous system. The effects could be noted at least twenty-four hours after the dose and were cumulative.

Dearborn (4) gives a summary of the bearing of attention in its different aspects upon exercise and physical education in general.

He combines a vasomotor, with a nervous coördination theory. It is valuable largely for its practical suggestions to the teacher of physical education.

Two papers of a more theoretical character have appeared. Rignano (11, 12) in an article published both in French and in German advances the theory that attention arises from a conflict between two affective inclinations. In the second part of his work he argues that intensity and choice of memories really depend upon this affective element, that associations alone will not really explain. On the nervous side he explains these processes by the interaction of different nervous processes either in harmony or in opposition. He does not make very clear, however, the exact relation between sensation and affection or between the affective elements and the nervous currents. Lüdtke (8) traces the history of the word apperception from Leibniz to Lipps and Jerusalem in German psychology. He points out the different meanings that it has had for different men and the inconsistencies in use by different men, particularly by Wundt, and ends with a plea that it be discarded from the psychological and philosophical vocabulary.

## REFERENCES

1. D'ALLONNES, G. R. Recherches sur l'attention. *Rev. phil.*, 1911, 71, 285-312; 494-520.
2. D'ALLONNES, G. R. Procédé clinique pour mesurer la rapidité de l'attention. *J. de psychol. norm. et path.*, 1911, 8, 47-51.
3. BUSCH, A. Ueber den Einfluss des Alkohols auf Klarheit und Umfang des optischen Bewusstseins. *J. f. Psychol. u. Neur.*, 1910, 17, 63-82; 1911, 18, 36-71.
4. DEARBORN, G. V. N. Attention: Certain of its Aspects and a Few of its Relations to Physical Education. *Amer. Phys. Educ. Rev.*, 1910, 15, 559-571; 637-650; 1911, 16, 26-40; 125-143; 186-199.
5. FRANCHINI, G. Le graphique psychometrique de l'attention dans les maladies mentales. *Arch. ital. de biologie*, 1911, 54, 267-277.
6. GRASSI, ISABELLA. Einfache Reaktionszeit und Einstellung der Aufmerksamkeit. *Zsch. f. Psychol.*, 1911, 60, 46-72.
7. JACOBSON, E. Experiments on the Inhibition of Sensations. *PSYCHOL. REV.*, 1911, 18, 24-53.
8. LÜDTKE, F. Kritische Geschichte der Apperzeptionsbegriffe. *Zsch. f. Phil. u. phil. Krit.*, 1911, 141, 41-135.
9. MCCOMAS, H. C. Some Types of Attention. *PSYCHOLOGICAL MONOGRAPHS*, 1911, 13, whole No. 55.
10. PRAGER, J. J. Experimenteller Beitrag zur Psychopathologie der Merkfähigkeitsstörungen. *J. f. Psychol. u. Neur.*, 1911, 18, 1-22.
11. E. RIGNANO, E. De l'attention. I. *Scientia*, 1911, 10, 165-190. II. 1912, 11, 71-87.
12. RIGNANO, E. Von der Aufmerksamkeit. *Arch. f. d. ges. Psychol.*, 1911, 22, 267-311.



## TIME AND RHYTHM

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Basler (1), from a very few observations with excellent apparatus, concludes that two tactual stimuli on the same area fuse when separated by an interval of about  $50 \sigma$ , or less, on finger tip, and by longer intervals on other parts of the hand. He points to the difference between such intervals and the intervals found adequate by other observers with serial stimulations—from a few  $\sigma$  to less than one  $\sigma$ . In his second paper (2) Basler reports a similar peculiarity of light stimuli. The maximal interval permitting fusion between two stimuli, produced by revolving sector, was  $83 \sigma$ , whereas the maximal interval for flicker was  $33 \sigma$ .

Brewer (3) and Stratton (10) determined the thresholds of duration between two successive visual stimulations on different retinal areas, and the thresholds for movement-duration. Brewer, with five subjects, using an exposure-pendulum which gave two points of light or a moving point, found thresholds of from  $2 \sigma$  to  $58 \sigma$  for discrete succession merely,  $19 \sigma$  to  $76 \sigma$  for motion merely,  $22 \sigma$  to  $61 \sigma$  for order, and  $19 \sigma$  to  $76 \sigma$  for direction. The differences due to angular separation and length of movement are inconsiderable. Stratton, with two subjects, using the pendulum, and a wheel-pendulum, exposing successively the two halves of a streak of light, or equivalent motion of a half, obtained thresholds of  $16.4 \sigma$  and  $14.8 \sigma$  for mere succession and  $31.5 \sigma$  and  $13.8 \sigma$  for mere motion. Both experimenters used the method of serial groups which in the reviewer's estimation detracts from the significance of the definite values of the thresholds, but does not diminish the general importance of the results.

Pauli (9) investigated the temporal relations of two visual stimuli, one foveal and one peripheral. He worked with two small surfaces illuminated by Geissler tubes, controlled by the time attachment to the Zimmermann kymograph. He found that of two simultaneous stimuli, the foveal was sensed first, the peripheral stimulus needing to be advanced  $50 \sigma$  to  $100 \sigma$  to make the two appear simultaneous. The differential increased with the angular separation of the stimuli, and with the intensity and area of the foveal stimulus; it was greater for the temporal field. The direction of attention had no influence (Dvorák and Bethe had reported such influence). In this part of the work Pauli apparently took no account of eye-movement.

The phenomenon observed by Mach from which these experiments grew—the green appearance of a momentary red light in peripheral vision—was also found to be unaffected by the direction of attention.

Pauli also attempted to measure the rapidity of change (spatial) of visual attention, using a method suggested by Külpe: to find the time interval between two stimuli,  $10^\circ$  to  $60^\circ$  apart, which brings the second just as the attention is ready for it. This time, 80  $\sigma$  to 170  $\sigma$ , Pauli thinks to be not a function of eye-movement, because similar experiments with voluntary eye-movements gave a much longer time.

It would seem remarkable that the significant American work in eye-movement should be so neglected by the Germans, were it not that they seem to be unaware of progress in many other lines also.

Gildmeister (7) remarks on a difficulty he finds in counting repetitions of a given process (pulse, etc.), and recommends the use of some melody involving an eight-rhythm ( $4/4$  or  $2/4$ ): the observer need only notice the tone on which the observation ends; computing the number subsequently; or, after habituation, obtaining it directly from association with the note. This method should be useful to any one afflicted as Gildmeister is.

For estimating a time interval, in default of mechanical aids, Gildmeister finds it useful to run over a melody in march tempo; with a certain melody he is able to come within 10 per cent. of 120 measures to the minute. Hence, he needs to note only the number of repetitions and point of ending in the final repetition.

Dunlap, in his first article (5), argues for the explicit consideration of rhythmic grouping as a function of the specious present. In his second article (6) he gives the results of experiments undertaken with this consideration in view. The threshold of difference for rate of discrete auditory stimulation (50 per cent. discrimination in the author's tables and charts, which is the same as 75 per cent. right judgment by the traditional method) is lower with rhythmic grouping than without; while not appreciably higher for series with irregular intensities and durations of stimuli than for regular series. The difference-thresholds for time-intervals corresponding to the rates used, were appreciably higher. Experiments with two intensities of auditory stimuli, and others with two modes (auditory and visual), give results which the author thinks speak for strain-sensations as time-content.

Brown (4) reports mean variations of the measurements of force and time-relations of rhythmic tapping; of rhythmically vocalized syllables; and of a mother goose jingle. The mean variation for the

force of the foot or foot element is from 2 to 4 times as large as the mean variation of the duration of the same. This is an indication that the time element is more fundamental than the accent in rhythm.

Landry (8), in a volume which he opines "n'est que trop succinct," presents the results of some measurements of the rhythm and tempo of French verse and prose declaimed by various persons ranging from Bernhardt and Mounet-Sully to illiterates. Considerable space is given to a very good discussion of the psychology of rhythm, which however does not seem to advance the subject; and there is also a discussion of the rhythmic peculiarities of spoken French which is certainly interesting and informing, although the reviewer makes no pretense of being able to judge of its accuracy. One point is however made quite clear (particularly by Livre II., Chap. I.): in these matters no foreigner need hope to do more than accept the opinion of the Frenchman whom he believes to be the most competent authority.

The two important indications in Landry's results are (1) that the rhythmic divisions are controlled but slightly by the significance of the word-groups, and not at all by logical word-relations, and (2) that increase in emphasis of an element increases its duration; but these are not new discoveries.

## REFERENCES

1. BASLER, A. Ueber die Verschmelzung zweier nacheinander erfolgender Tastreize. *Pflüger's Arch.*, 1911, 143, 230-244.
2. BASLER, A. Ueber die Verschmelzung zweier nacheinander erfolgender Lichtreize. *Pflüger's Arch.*, 1911, 143, 245-251.
3. BREWER, J. M. The Psychology of Change; on Some Phases of Minimal Time by Sight. *PSYCHOL. REV.*, 1911, 18, 257-261.
4. BROWN, W. Temporal and Accentual Rhythm. *PSYCHOL. REV.*, 1911, 18, 336-346.
5. DUNLAP, K. Rhythm and the Specious Present. *J. of Phil., Psychol., etc.*, 1911, 8, 348-354.
6. DUNLAP, K. Difference Sensibility for Rate of Discrete Impression. *PSYCHOL. REV.*, 1912, 19, 32-59.
7. GILDMEISTER, M. Ueber Zählen und Zeitschätzen. *Zsch. f. biol. Technik u. Methodik*, 1911, 2, 49-52.
8. LANDRY, E. *La théorie du rythme et le rythme du français déclamé*. Paris: Champion, 1911. Pp. 427.
9. PAULI, R. Ueber die Beurteilung der Zeitordnung von optischen Reizen in Anschluss an eine von E. Mach beobachtete Farbenerscheinung. *Arch. f. d. ges. Psychol.*, 1911, 21, 132-218.
10. STRATTON, G. M. The Psychology of Change; How is the Perception of Movement Related to That of Succession? *PSYCHOL. REV.*, 1911, 18, 262-293.

## SPECIAL REVIEWS

### THE ORIGINS OF MUSIC

*Die Anfänge der Musik.* CARL STUMPF. Leipzig: J. A. Barth, 1911.  
Pp. 209.

In this interesting little book the author draws in a simple and popular manner the conclusions which may be reached from recent studies of primitive music. It should perhaps be noted at once that the use of the term *primitive* is to be taken relatively, not literally. Careful study of the structure of exotic melodies usually reveals the fact that they represent a considerable degree of cultural evolution. Only by reference to relative simplicity of structure may we approach a conception of the beginnings of music.

The book deals first with certain recent theories as to the origin of music. The Darwinian theory is characterized by the phrase: "Im Anfang war die Liebe." Here it is noted that Darwin's attempt to derive music from sexual selection gives no adequate explanation of the unique ability to recognize and transpose melodies. So far as we yet know animals have no capacity of this order. Bird songs seem to depend upon absolute pitch, whereas human music is based upon a recognition of tonal relations which involves a capacity for abstraction which the animal does not appear to possess. Spencer's theory is characterized by the phrase: "Im Anfange war das Wort," indicating a derivation from accent and tonal variations in speech. But music differs essentially from singing-speech in the use of fixed intervals. In speech, on the contrary, it has been shown that the sounding of a single syllable shows great variation in pitch. Similarly the view that music finds its origin in rhythm, as characterized by Hans v. Bülow's phrase: "Im Anfange war der Rhythmus," is equally unsuited to explain the facts, since the problem of definite intervals remains unsolved. Rhythmic expression may involve differences in intonation, but it makes no demand for consonant intervals. Furthermore, the most primitive songs known to us evidence a regard primarily for musical composition, rather than any definite aim or requirement of rhythmic expression. The oft-cited rhythmic accompaniment of work done by a group in unison is not found among the most primitive tribes, but seems to indicate a stage in cultural evolution beyond that at which music appears.



To explain the origin of music we must have in mind, not merely tonal expression of any arbitrary sort, but the use of tones in definite relationships. The explanation for this phenomenon finds its basis for Stumpf in the inherent capacity to recognize tonal fusion. He therefore characterizes his own explanation by Goethe's phrase: "Im Anfang war die Tat." The problem is, how did primitive man discover this natural capacity? Stumpf believes that the essential facts were first brought to his notice through the use of vocal signals. In signalling the production of an intense and relatively fixed high tone is demanded. The duplication of this tone by men, women and children, whose vocal register naturally varies, brings about the expression of similar tones which appear to be identical because they fuse. Thus in the attempt of voices of different range to produce the same tone, we see the first use of the consonant intervals of octave, fifth and fourth which furnish the framework for all music. Little by little these intervals are recognized as such, even when the absolute pitch varies.

The first melodic phrases may be due to the filling-in of the interval of the fourth, say, with arbitrary tones. Brief phrases constructed from such tones are well adapted to use as signal calls, and it is noted that, among the most primitive songs recorded, the fourth and fifth represent the greatest intervals used, indeed they often limit the total range of the melody. Thus we see that although the steps in primitive music are often arbitrary and sometimes variable, they are nevertheless constrained by the limit of a consonant interval. The evolution of music is dependent upon the reconciliation of these small steps with the consonant intervals which furnish the framework and basis of transposition. Polyphony is found very early in parallel passages where various members of a family may duplicate the melody simultaneously in octaves, fifths and fourths. The use of the falsetto, which is very frequent, also indicates an attempt to imitate the precise register of a certain individual.

From primitive instruments we may learn much concerning the origins of music, although it is well to remember that many very simple forms of instrument now in use probably represent a retrograde development from forms originally much more complex. Pipes are among the most ancient instruments of which we have knowledge. The introduction of holes to produce a variety of tones was doubtless determined at first, not in accordance with musical principles, but by external conditions. For instance, the rings of the bamboo, and the use of three or six fingers seem to have been prominent factors.

Pipes of varying length are combined in the Pan's-pipes which may follow one another in pitch, or form groups, sometimes even giving a definite melody. We are not to conclude from this, however, that the intervals used by a people are entirely arbitrary, varying from individual to individual. On the contrary, even though the scale contains not a single pure consonance, the relation of the intervals is fixed and duplicated with remarkable exactness in all the instruments of a tribe.

Among some of the wind instruments there occurs the possibility of blowing higher tones (*Überblasen*), thus producing harmonics in definite consonant relationship to the fundamental. This may be considered as a contributory cause for the use of consonant intervals. It is not a primary cause, however, for these intervals are quite as well known among people who have no such instruments. String instruments appear to have their origin in a modification of the hunter's bow. The musical-bow, much used by primitive people, is a single stringed bow which indicates this analogy clearly. Drums are found in great variety with varying tones, but no consonant effects. The xylophone and metallophone are among the most interesting of exotic instruments, since with their aid we can study most exactly the scale of intervals in use. Here, as with the Pan's-pipes we learn the exactness with which unmusical intervals are employed.

The pleasure in manifold combinations, developments and resolutions of accords is a modern invention. Primitive music is essentially homophonic; dissonances without resolution are frequent. The use of polyphony is quite different from that which we make of it. Aside from the parallel passages, already noted, the repetition of a fixed tone is often met with, similar to the drone-bass or bourdon. However, if polyphony is undeveloped, rhythmic accompaniment has evolved to a point quite beyond our ordinary capacity. This is due primarily to the lack of polyphony, which requires for its performance relatively simple rhythms. The rhythmic accompaniments to the songs of primitive peoples are often extraordinarily complex, and we find that five- and seven-part measures are not at all exceptional. The rhythmic setting is also characterized by a frequent and complicated shifting from one tempo to another.

The appearance of a fixed scale indicates the usage of five and seven intervals within the octave as the most common divisions. Two methods of development may be distinguished: (1) the construction of a scale by reference to the consonant intervals of fourth,

fifth, and later, the third, with a more or less arbitrary filling-in of the larger steps; (2) the construction of a scale by a purely arbitrary division into five or seven steps of equal intervals, as may be found in the Siamese and Javanese scales, respectively. Even in this case, however, the limiting interval is the octave, so we may say that all scales in their development are in some measure limited by the principle of consonance.

An interesting polyphonic orchestral usage among certain Asiatic peoples is noted. The principle of these compositions is a more or less independent elaboration and variation upon a central melodic theme, which is carried out in unison by the different instruments of the orchestra. The effect upon our ears, trained to harmonic combinations, is very strange, but to a people whose musical development has been strictly homophonic, the effect is apparently agreeable. Stumpf proposes to call this form of composition *heterophony*, a term which he derives from a passage in Plato which describes what appears to have been a similar practice among the Greeks.

The second part of the volume consists of a series of transcriptions of exotic melodies, largely derived from the phonogram archives of the Berlin Laboratory, with a running commentary on varying peculiarities and principles of construction. The examples include melodies from the Wedda of Ceylon—the most primitive forms of music which we now know,—the Andamanese, the Kubu of Sumatra, Australian aborigines, South American, Mexican and North American Indians, the Eskimos, Greenlanders and the African Negroes. There are also appended eleven plates illustrating primitive musical instruments.

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## DISCUSSION

### THE PSYCHOLOGY OF ADVERTISING

A recent review<sup>1</sup> of Strong's *The Relative Merit of Advertisements* displays so inadequate an appreciation both of the problem of that suggestive monograph and of the tendencies of modern experimental psychology in general that I am impelled to call further attention to the work. It is much to be regretted that this book should have been reviewed by one who failed to discriminate between a personal point of view and the total content of a large and growing science; between individual inclination for certain species of problem and "the very characteristics of a psychological experiment."

From the fact that the mathematical portion of the work in question may have been puzzling to the reviewer it does not at once follow that a search for exact measurement of complex mental processes is "detrimental to good psychology." There are indeed psychologists who are temperamentally disposed to be equally short-sighted and to assert that it is just the "detailed introspection" and the "qualitative distinctions" that get nowhere. The fact is, however, that qualitative distinction and quantitative analysis are both needed in a psychology that is "good."

Two further things are also true. The first is that a piece of work which emphasizes the latter type of inquiry reflects the trend of by far the greater part of current investigation and interest. One familiar with the contents of current periodicals and recent treatises will require no proof of this fact. The second truth is that a large body of students and teachers have been convinced that a psychology which refuses to be both sterile and unstimulating, but which aspires to be adequate and serviceable in its treatment of conscious individuals, must busy itself with outcome, conduct and behavior as much as, if not even more than, with mere content and qualitative elements and patterns.

As the writer has already insisted: "A psychology which aims to be an account of behavior cannot go far without making a careful study of more complex judgments such as those of appeal and interest. Especially will this be true of a psychology which aspires to be con-

<sup>1</sup> PSYCHOLOGICAL BULLETIN, March 15, 1912, p. 124.



cretely serviceable. Such a psychology will find but little use for the introspective method. It will be interested, not in the momentary content of a conscious moment; nor in the descriptive character of the sensory fragment which may at the moment be the bearer of meaning; nor in the instrument, criterion or vehicle of an act of apprehension, a comparison, a feeling or a choice. It will be most of all interested in the outcome of this moment in the form of behavior, an act, a choice, a judgment, and in the character, reliability, constancy and significance which the outcome of such a mental operation bears."<sup>1</sup>

To return to the review in question, the paragraph presented by Mr. Tait as embodying the "chief results" quite ignores the real problem, which was the measurement of the relative strength of various appeals and interests, and the determination of the dependence of these measurements on such factors as commodity, sex, class and copy differences. The paragraph cites only certain interesting facts which came out as by-products in the course of the inquiry.

Not until the importance of this type of study is fully realized shall we possess a body of principles that will really convey information concerning human nature and human behavior, a knowledge which the psychology which Mr. Tait seems to have been taught has so far failed to deliver. If a personal opinion be permitted by way of contrast with that of the reviewer, the writer would like to express his conviction that pure qualitative and introspective distinctions fall as far short of an adequate psychology as the conversational description of a stomach-ache falls short of being a complete account of the laws of digestion.

It is however not clear what the reviewer means by saying "any detailed introspection is lacking." The *determination* to introspect and to report the introspections as such was purposely avoided, and with good reason. But the determination to introspect and to report is apparently not a sufficient criterion of introspection. Indeed one of the foremost exponents of the introspective methods has remarked: "After all, therefore, it is not so absurd as at first thought it seems, to say that we require the animal and society and the madman to introspect. . . . All three may attend; all three may report their experiences."<sup>2</sup> Is a report any the less introspective, in the final sense, because it is expressed by gesture, by behavior or by arrangement or indication of stimuli, rather than vocally or graphically?

<sup>1</sup> Judgments of Persuasiveness. PSYCHOLOGICAL REVIEW, July, 1911.

<sup>2</sup> TITCHENER, *A Text-Book of Psychology*, p. 35.

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The reviewer was quite right when he remarked, "By a conglomeration of vague preferences under still vaguer headings, we can never reach the basis of appeal." But Strong seems to have fully realized this even before he set about his investigation. It was just this conglomeration which the psychology of appeal had previously contained, and for which "The Relative Merit of Advertisements" suggests the substitution of definite judgments and weighted comparisons, quantitatively as well as qualitatively expressed.

Whether this type of work is or is not to be called "psychological" depends of course on the idiosyncrasies of one's vocabulary. A study of the relative strength of appeals and interests, of the certainty and constancy of the judgments passed upon them, of the possibilities of the exact measurement of the relations to be found among such complex stimuli, and of individual, sex and class differences in these respects, may not fall within that field of psychological inquiry which happens to be the most interesting to one or to several particular individuals. But the science is surely larger than any one set of interests. Let us not quibble over the use of a word. Even a quibbler should observe that the subtitle of the monograph in question includes both its psychological and statistical aspects.

My purpose in writing is not to defend either the matter or the method of this pioneer work in the application of exact method to a phase of applied psychology which has hitherto been satisfied with mere generalities. These features are amply justified by the immediate results of Strong's work. My purpose is to put on record the conviction of many BULLETIN readers that human nature is larger than any one personal point of view, and that any attempt to extend the problems, methods and applications of psychological investigation should be both welcomed and encouraged.

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## BOOKS RECEIVED DURING MARCH AND APRIL

- SCHILLER, F. C. S. *Formal Logic. A Scientific and Social Problem.* London: Macmillan, 1912. Pp. xviii + 423. \$3.25 net.
- STUMPF, C. *Die Anfänge der Musik.* Leipzig: J. A. Barth, 1911. Pp. 209. Mk. 6.60; geb. Mk. 7.50.
- LEE, V., and ANSTRUTHER-THOMSON, C. *Beauty and Ugliness. And Other Studies in Psychological Æsthetics.* London and New York: John Lane Company, 1912. Pp. xiii + 376. \$1.75 net.
- RICE, D. E. *Visual Acuity with Lights of Different Colors and Intensities.* (No. 20 of Archives of Psychology.) New York: The Science Press, 1912. Pp. 59.
- BEAN, C. H. *The Curve of Forgetting.* (No. 21 of Archives of Psychology.) New York: The Science Press, 1912. Pp. 45.
- HODGE, F. A. *John Locke and Formal Discipline.* Lynchburg, Va.: J. P. Bell Co., 1911. Pp. 31.
- LEVI, A. *Studi Logici. II. Il trascendentalismo logico.* Firenze, 1911. Pp. 34.
- LEVI, A. *La Filosofia dell' Esperienza. II. La Filosofia dell' Intuizione primitiva.* Bologna, 1911. Pp. 31.
- HARTENBERG, P. *Traitement des neurasthéniques.* Paris: Alcan, 1912. Pp. 346. 3 fr. 50.
- MEYERSON, É. *Identité et réalité.* (2d ed.) Paris: Alcan, 1912. Pp. xix + 542. 10 fr.
- DUNLAP, K. *A System of Psychology.* New York: Scribner, 1912. Pp. xiv + 368.
- JOHNSTON, C. H. *High School Education.* New York: Scribner, 1912. Pp. xxii + 555.
- PERRIER, L. *Le Sentiment Religieux a-t-il une origine pathologique?* Paris: Fischbacher, 1912. Pp. 63.
- [ANON.] *Sixty-fourth Annual Report of the Trustees of the Massachusetts School for the Feeble-Minded at Waltham for the year ending November 30, 1911.* Boston: Wright & Potter Pr. Co., 1912. Pp. 48.
- DORSEY, J. O., & SWANTON, J. R. *A Dictionary of the Biloxi and Ofo Languages.* Bureau of American Ethnology, Bulletin 47. Washington: Gov. Printing Co., 1912. Pp. 340.

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## NOTES AND NEWS

THE Ninth Annual Meeting of the Experimental Psychologists was held at Worcester, Mass., April 15-17.

PROFESSOR LILLIEN J. MARTIN, of Stanford University, gave an address entitled "Ueber die Lokalisation optischer Vorstellungsbilder" at the V. Kongress für experimentelle Psychologie, held in Berlin, April 15-19.

AT the National University of Mexico Professor J. M. Baldwin is delivering the second half of the two years' program of lectures on psychosociology. In addition to these lectures a course in the history of psychology is also announced.

A NEW periodical, *Imago*, is announced from Vienna, edited by Professor S. Freud and published under the direction of Otto Rank and Dr. Hanns Sachs. It is to be devoted to the application of psychoanalysis to the entire field of the mental sciences.

THE April number of the BULLETIN, dealing with psychopathology, was prepared under the editorial care of Dr. Adolf Meyer, of the Johns Hopkins Hospital.

THE following items are taken from the press:

DR. J. E. W. WALLIN has been appointed assistant professor of educational psychology and director of the recently established department of clinical psychology in the school of education of the University of Pittsburgh.

THE coming session of the Dartmouth Summer School will be in charge of Dr. W. V. D. Bingham, director of the psychological laboratory, and professor of psychology and education.

DR. GEORGE H. MOUNT has resigned his position as instructor in psychology in the Northern Michigan State Normal School to accept an assistant professorship in the Iowa State Teachers' College.

DR. ARTHUR HOLMES, assistant professor of psychology at the University of Pennsylvania, has accepted the post of dean of the faculties of Pennsylvania State College.

DR. WILHELM WUNDT, professor of philosophy at Leipzig, has been made a knight of the Prussian order "pour le mérite."



